

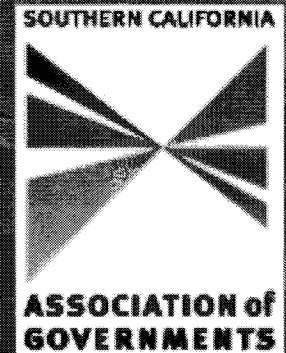
SCAG

New Travel Demand Model

**Presented to the
Goods Movement Task Force**

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Southern California Association of Governments

What's New – Regional Model

- Implement TransCAD Modeling Software
 - GIS interface
- Switch to PC Platform
- Modeling Area
 - Covers all SCAG Region
- New Zonal System
 - 4109 TAZs – Based on Census Tracts
 - 31 Port zones
- Networks – Highway & Transit
 - GIS-based network, single integrated network
 - Master network concept – Manage multiple networks

SCAG's New Travel Demand Model

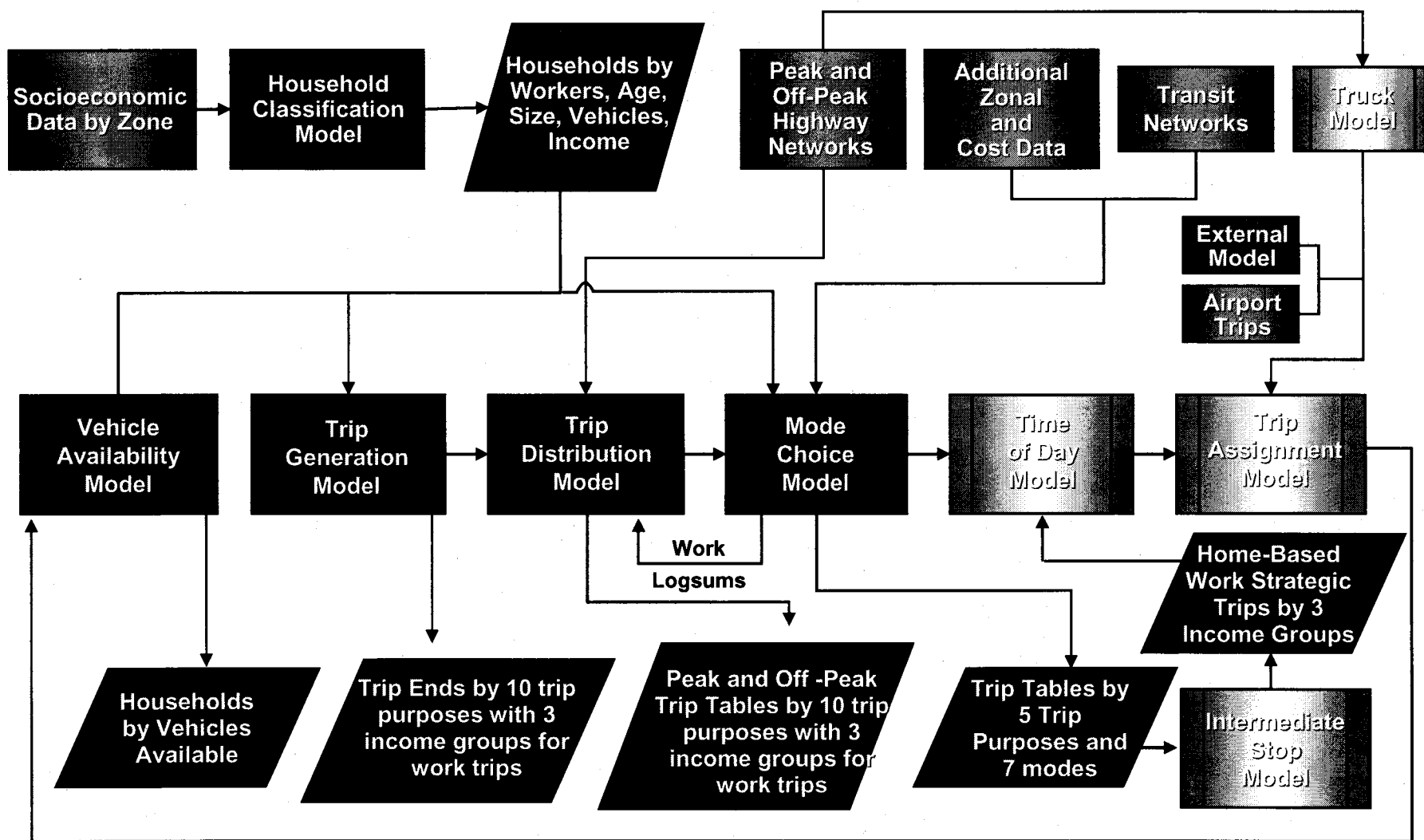
■ Four-Step Model

- Trip Generation
- Trip Distribution
- Mode Choice
- Assignment

■ Updated Components

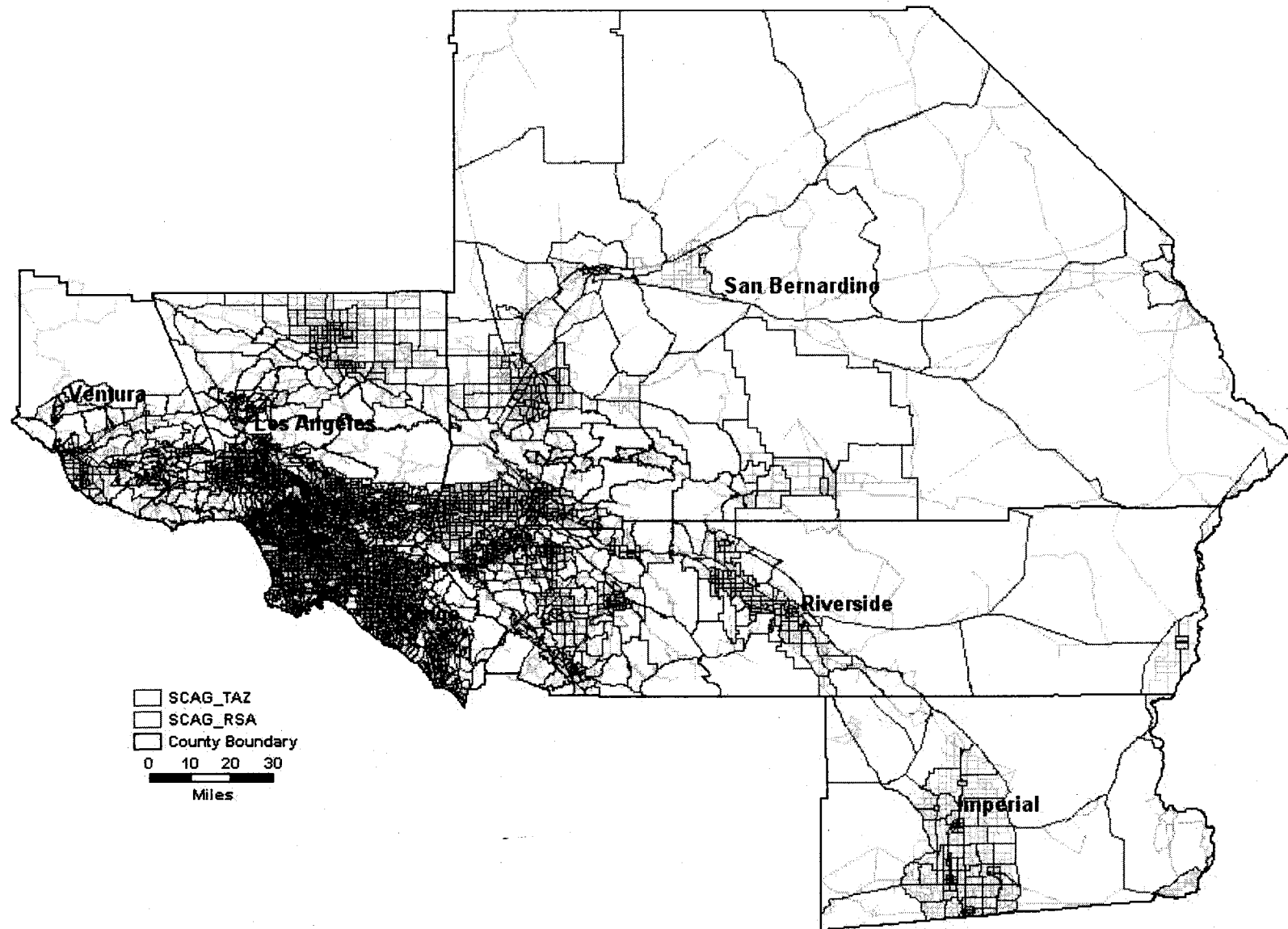
- Detailed Socioeconomic Data
- Vehicle Availability Models
- Household Classification Models
- Trip Production and Attraction Models
- Trip-Based Purposes
- Home-Based Work Strategic
- Calibrate to Post-Census Travel Survey
- New Volume Delay Curves
 - (Akcelik functions)

SCAG Regional Modeling Process



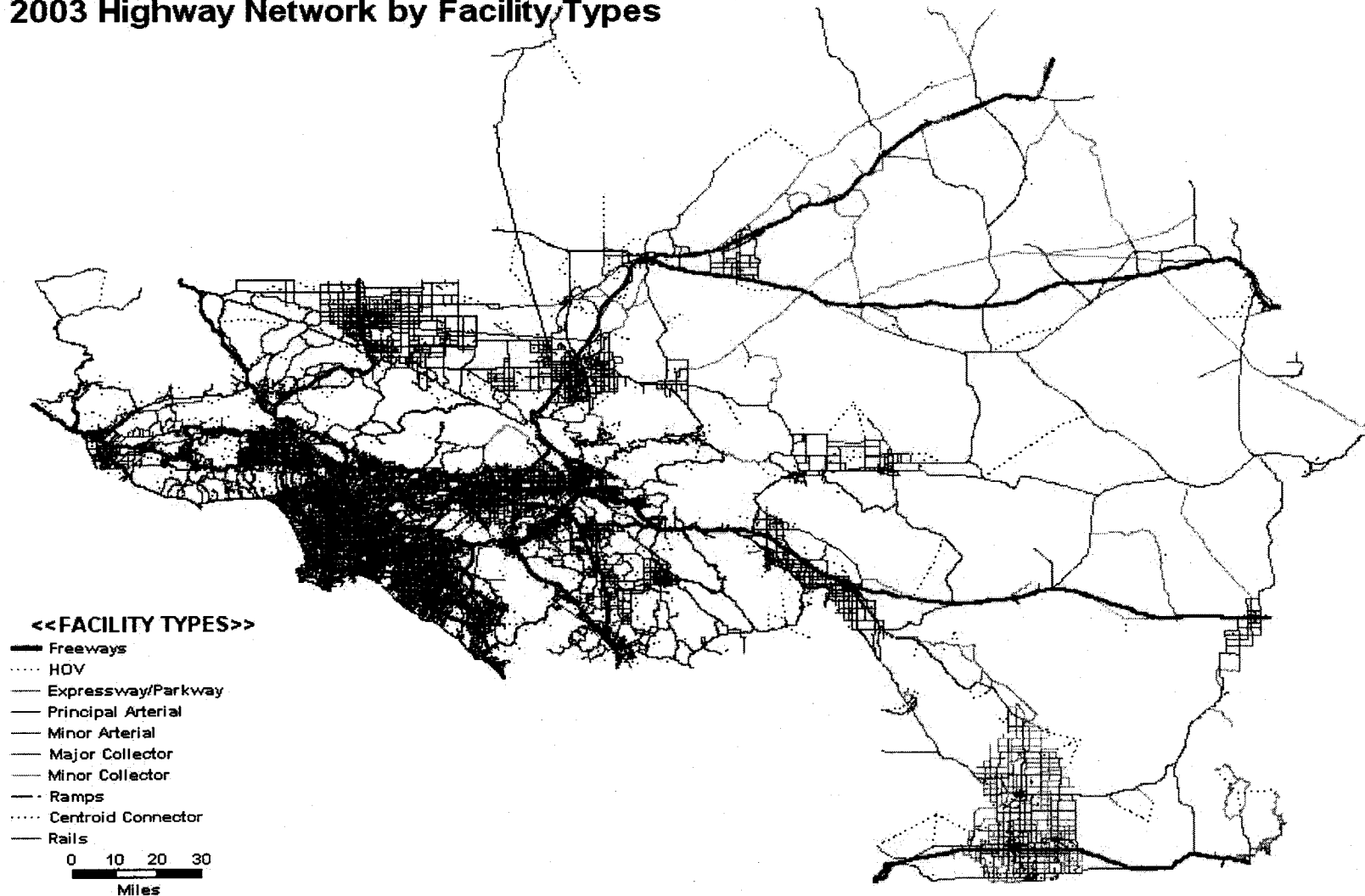
Legend ■ Input Files ■ Updated Models ■ Data Output Files ■ Existing Models

New SCAG Model Boundary



Highway Network

2003 Highway Network by Facility Types



Current Status

- Model Development/Estimation - Complete
- Model Calibration - Complete
 - 2000 CTPP
 - SCAG post-census Household Travel Survey
 - 2000 HPMS & transit on-board survey
- Model Validation - Complete
 - 2003 screenline counts
 - 2003 PeMs database
 - 2003 HPMS & transit on-board survey
- Ready for RTP07 Modeling Analysis
- Model Task Force Presentation - 1/24/07

SCAG Heavy-Duty Truck Model Update



Overview of Existing SCAG HDT Model

- Three truck weight classes – Trip purposes:
 - Light-Heavy -8,500 to 14,000 lbs
 - Medium-Heavy – 14,000 to 33,000 lbs
 - Heavy-Heavy – 33,000 lbs and above
- Internal model – Trip generation, trip distribution, trip assignment, model validation
- External model – Commodity flows converted to truck trips and disaggregated to TAZs
- Special generator models – Ports and air cargo

Review of Existing Model (Task 2)

Improvements – External Model

- Improve representation of intermediate handling locations
- Improve/streamline software for trip table estimation

Improvements – Internal Model

- Revise trip rates for warehouse and distribution trips, local pickup and delivery trips, and service trips
- Incorporation of robust database on trip length frequency distributions and Gravity model by GVW
- Revise time-of-day, PCE factors, and volume-delay functions

Improvements– Special Generator Model & Assignments

- Update Port Special Generator Model & Rail Intermodal

External Model (Task 5)

- Improvements to warehouse flow representation
- Update model database:
 - Commodity flow data – 1996 ITMS forecasted
 - Updated land use & employment by 4-digit NAICS
 - LTL trucking terminal locations
 - Truck payload factors and tonnage distributions by weight class – SCAG surveys, WIM, and VIUS
 - Truck counts
- Code model procedures in TransCad

Special Generator Models (Task 7)

- Port – LA/LB

- Trip generation based on Port's QuickTrip Model and current cargo forecasts
- Trip distribution – Fixed O-D matrix from summer gate surveys

- Rail intermodal

- Trip tables based on carrier and shipper surveys for LA Metro's Cube Cargo Model

Internal Model Data Improvements (Task 3)

■ Four Trip Types

- Manufacturing – No new data collection
- Warehouse and distribution centers – TRANSEARCH pre-cursor data, new interviews, MTA TLN survey results
- Urban pickup and delivery – Trip diaries
- Service – Trip diaries

■ Sample Frame – DMV data, FleetSeek, and MISTER

- Cluster sampling by vehicle/fleet

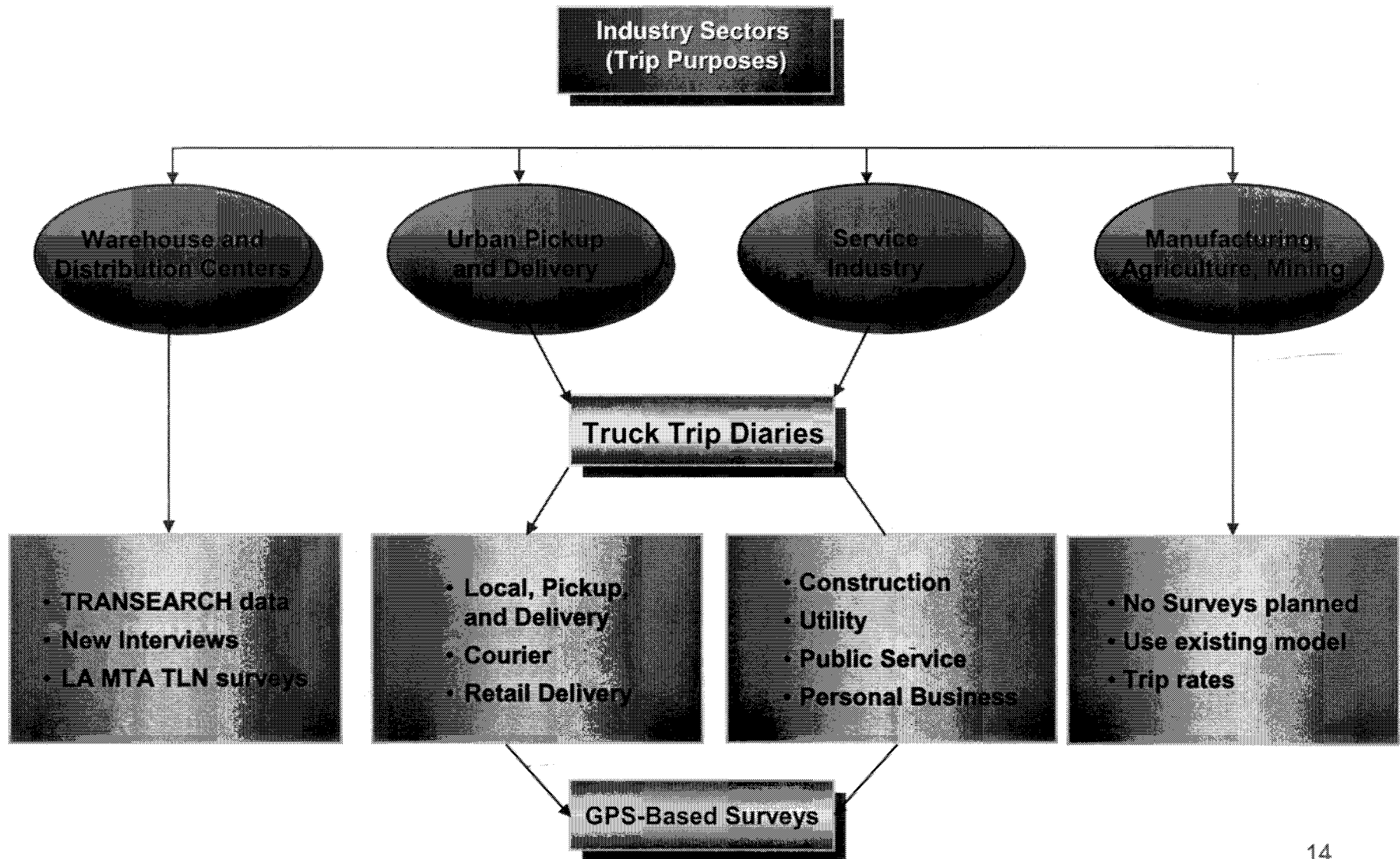
■ Stratification

- Weight class – Light, Medium, Heavy-Duty Trucks
- Business type – Manufacturing, Warehouse, Pickup/Delivery & Service

Truck Survey Overview

- Pre-Test of Truck Survey
- Survey Methodology
 - Recruiting by phone
 - Phone and mail-back retrieval
 - Incentives – Fleet coordinator and driver
- Target Number of Truck Surveys
 - Recruit – 4,000
 - Target – 2,000
 - Completes – 1,600
- Geocode Surveys to Traffic Analysis Zones (TAZ)
- Analysis/Summary of Survey Results

Survey Methodology



Sample Size Calculations

- Additional funding for surveys

Industry Sector	Light-Heavy	Medium-Heavy	Heavy-Heavy	Total
Mail/Parcel	162	158	173	492
Retail	180	169	194	543
Utilities/Construction	111	114	209	434
All Services	180	162	189	530
Total	632	603	765	2,000

Sample size increased relative to additional funding sources.

- Sample size = 2,000
- Precision level of +/- 5.5% at 90% confidence

Pre-Test Survey Results

- Sample performance - poor
- Obtained phone numbers for 30% of sample
- Many phone numbers disconnected or old
- Small size fleets (average = 4 trucks/fleet)
- Low response rates (26%)

Trip Generation/Distribution Models (Task 6)

- Incorporate data from the Travel Survey
 - New trip rates
 - Updated trip length
- Investigate introducing new trip purposes for generation and distribution models
- Convert to new zone system
- Model Calibration/Validation

Trip Assignment (Task 8)

- Update PCE Methodology - Grade/Congestion
- Adjust time-of-day factors – Based on new survey results
- Modify Volume Delay Functions
- Truck prohibitions

Status of Tasks

- Task 1 – Trip Production Model Update – Done
- Task 2 – Review Existing HDT Model – Done
- Task 3 – Data Collection – Internal Trucks – In Progress (01/31/07)
 - Collected data and developed preliminary trip table for Warehouses/Distribution Center/Terminals
 - Completed pre-tests of truck trip diaries and made recommendations on improvements to sampling methodology for main surveys
 - Main surveys are in progress
 - Traffic count program in progress

Status of Tasks

- Task 4 – Data Collection – External Trucks – Done
- Task 5 – External Truck Model – Done
- Task 6 – Trip Generation and Distribution Models – In progress (02/28/07)
 - Developed methodology for trip generation and distribution models
 - Developing trip rates and trip length frequency distributions for Warehouses/Distribution Center/Terminals
 - Developing TransCAD scripts for trip generation and distribution models
- Task 7 – Port Trip Generation & Distribution Models – Done

Status of Tasks

- Task 8 – Truck Assignment – In Progress (01/31/07)
 - Time of day factors
 - Update PCEs
 - Route choice flexibility
 - Truck prohibitions
- Task 9 – Validation of HDT Model – Not started (03/31/07)
- Task 10 – HDT Forecasts – Not started
- Task 11 – Recommendations – Not started

Thank you